

What is claimed is:

1. A semiconductor module, comprising:
  - a substrate;
  - a semiconductor device mounted on the substrate, and having opposite surfaces and electrodes, one of the opposite surfaces disposed on the substrate, the electrodes disposed on the other one of the opposite surfaces; and
  - a plate-shaped lead having an electrode joint joined to the electrodes, a wiring joint joined to a wiring unit disposed outside the semiconductor device, and a connector connecting the electrode joint and the wiring joint;
  - at least the electrode joint comprising a high thermal conductor, and a low expander disposed in the high thermal conductor.
2. The semiconductor module set forth in claim 1, wherein the low expander comprises a material whose linear expansion coefficient is smaller than that of the electrodes.
3. The semiconductor module set forth in claim 1, wherein the low expander comprises an invar alloy.
4. The semiconductor module set forth in claim 1, wherein the high thermal conductor comprises a pure metal or alloy whose major component is copper (Cu) or aluminum (Al).
5. A plate-shaped lead, comprising:
  - an electrode joint joined to electrodes of a semiconductor

device mounted on a substrate, the electrodes disposed on one of opposite surfaces of the semiconductor device;

a wiring joint joined to a wiring unit disposed outside the semiconductor device;

a connector connecting the electrode joint and the wiring joint;

at least the electrode joint comprising a high thermal conductor, and a low expander disposed in the high thermal conductor.

6. A semiconductor module, comprising:

a substrate;

a semiconductor device mounted on the substrate, and having opposite surfaces and electrodes, one of the opposite surfaces disposed on the substrate, the electrodes disposed on the other one of the opposite surfaces; and

a plate-shaped lead connecting the electrodes to a wiring unit disposed outside the semiconductor device;

the plate-shaped lead comprising:

an electrode joint joined to the electrodes;

a wiring joint joined to the wiring unit; and

a low-rigidity portion disposed at least at a part between the electrode joint and the wiring joint, and exhibiting a low rigidity lower than an ambient rigidity.

7. The semiconductor module set forth in claim 6 further comprising a supporter supporting the semiconductor device and the wiring unit; and the plate-shaped lead exhibiting a thermal expansion which differs from that of the supporter.

8. The semiconductor module set forth in claim 7, wherein the plate-shaped lead comprises a Cu material whose major component is copper (Cu); and the supporter comprises an Al material whose major component is aluminum (Al).

9. The semiconductor module set forth in claim 8, wherein the substrate makes the support.

10. The semiconductor module set forth in claim 6, wherein the low-rigidity portion comprises at least one member selected from the group consisting of thin-thickness portions, narrow-width portions, bellows, expanded portions and low-Young's modulus portions.

11. A plate-shaped lead connecting electrodes of a semiconductor device mounted on a substrate, the electrodes disposed on one of opposite surfaces of the semiconductor device which faces oppositely with respect to the substrate, with a wiring unit disposed outside the semiconductor device, the plate-shaped lead comprising:

an electrode joint joined to the electrodes;  
a wiring joint joined to the wiring unit; and  
a low-rigidity portion disposed at least at a part between the electrode joint and the wiring joint, and exhibiting a low rigidity lower than an ambient rigidity.